

Claims

1. A method for synchronizing configuration data between an Element Management System (EMS) and a Network Element (NE), wherein the configuration data of the NE is divided into configuration data layers, so that different configuration data layers comprise
5 different configuration data sets of minimum units, and the minimum unit identifier word is provided for each configuration data layer to identify the changes of the configuration data in the layer, comprising:

if the configuration data of the NE is changed, the NE changing the minimum unit identifier word of the configuration data layer corresponding to the changed configuration
10 data;

the EMS obtaining the changed minimum unit identifier word from the NE; and

the EMS comparing the received minimum unit identifier word with the minimum unit identifier word stored in it to determine which configuration data layer the changed configure data belongs to and the changes of the configuration data, and the EMS
15 synchronizing the changed configuration data of corresponding NE into it according to the determined result.

2. The method according to claim 1, wherein, the step of dividing the configuration data in the NE into configuration layers comprises:

according to different network structures and application modes, dividing the
20 configuration data in the NE into at least one configuration layer.

3. The method according to claim 2, wherein, the step of dividing the configuration data in the NE into at least one configuration layer comprises:

dividing the configuration data into an NE configuration data layer, a service configuration data layer and a table configuration data layer respectively.

4. The method according to claim 3, further comprising:

dividing the configuration data in the table configuration data layer into row content layers.

5. The method according to claim 1, wherein, the step of dividing the configuration data in the NE into configuration data layers comprises:

according to different synchronization modes corresponding to the configuration data, dividing the configuration data in the NE into at least one layer.

6. The method according to claim 1, wherein, the step of setting the minimum unit identifier word assigned for each of the configuration data layer comprises:

10 respectively setting a sequence number identifier word and/or a network management table identifier word and/or a mixed identifier word for each configuration data layer as the minimum unit identifier word.

7. The method according to claim 6, wherein, the mixed identifier word comprises: a configuration device identifier, or a changing time identifier or a configuration item
15 identifier, or the combination of any two or three of them.

8. The method according to claim 1, wherein, the step of changing the minimum unit identifier word of the configuration data layer corresponding to the changed configuration data comprises:

20 determining which configuration data layer the changed configuration data belongs to, modifying the minimum unit identifier word of the configuration data layer as well as those above the layer.

9. The method according to claim 1, further comprising: determining which EMS has changed the configuration data of the NE, and setting an operation user identifier word corresponding to the EMS;

25 the EMS obtaining the operation user identifier word from the NE; and

the EMS comparing the received operation user identifier word with the operation user identifier word stored in it to judge whether it is itself has changed the configuration data, if not, executing the step of synchronizing the configuration data, otherwise, ending the procedure.

5 10. The method according to claim 9, wherein, the minimum unit identifier word assigned for each configuration data layer further comprises: the operation user identifier word;

if the configuration data of the NE is changed, the NE determining which configuration data layer the changed configuration data belongs to, and modifying the
10 minimum unit identifier words of the configuration data layer and configuration data layers above the layer, and the NE further modifying the operation user identifier words comprised in the minimum unit identifier words.

11. The method according to claim 1, wherein, the NE sends a configuration changed event notification to EMSs, which comprises the changed minimum unit
15 identifier word.

12. The method according to claim 11, wherein, the step of NE sending configuration changed event notification to EMSs comprises:

the NE postponing sending the configuration changed event notification to the EMSs for a predefined period of time, if the configuration is changed again during the
20 predefined time, the NE will not send the configuration changed event notification until the new change(s) is(are) finished.

13. The method according to claim 11, wherein, the step of the NE sending the configuration changed event notification to the EMSs comprises:

if the NE continuously receives configuration commands from multiple different
25 management devices or a batch processing configuration commands from a single management device, the NE will not send the configuration changed event notification to the EMSs until all the corresponding configurations are finished.

14. The method according to claim 1, wherein, the EMS actively queries the NE for the minimum unit identifier word.

15. The method according to claim 1, wherein, the EMS compares the received minimum unit identifier word with that stored in it to determine which configuration data layer the changed configuration data belongs to and the configuration data changes, comprises:

the EMS comparing the minimum unit identifier word with the one recorded in it, if they are not identical, determining that the configuration data of the configuration data layer corresponding to the minimum unit identifier word is changed and determining the configuration data changes according to change details of the minimum unit identifier word.

16. The method according to claim 1, wherein, the step of the EMS synchronizing the changed configuration data of the corresponding NE comprises:

the EMS comparing the changed configuration data with that stored in its history record to determine the changes of the configuration data, and then synchronizing the configuration data in a predefined manner according to the changes of the configuration data of the NE.

17. The method according to claim 16, wherein, the step of synchronizing the configuration data by the EMS in the predefined manner according to the changes of the configuration data of the NE, comprises:

the EMS synchronizing the configuration data at a specified time.

18. The method according to claim 16, wherein, the step of synchronizing the configuration data by the EMS in the predefined manner according to the changes of the configuration data of the NE, comprises:

the EMS synchronizing the configuration data immediately when receiving the changed minimum unit identifier word and the operation user identifier word.

19. The method according to claim 16, wherein, the step of synchronizing the configuration data by the EMS in a predefined manner according to the changes of the configuration data of the NE, comprises:

5 after receiving the changed minimum unit identifier word and the operation user identifier word, the EMS delaying a predefined period of time before synchronizing the configuration data.

20. The method according to claim 16, wherein, the step of synchronizing the configuration data by the EMS in the predefined manner according to the changes of the configuration data of the NE, comprises:

10 setting a manual synchronization command and the EMS synchronizing the configuration data according to the command.